December 1967 Brief 67-10540

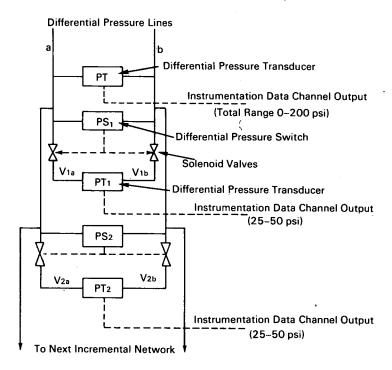


AEC-NASA TECH BRIEF



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Automatic Transducer Switching Provides Accurate Wide Range Measurement of Pressure Differential



The problem:

To measure differential gas pressure over a wide range (0-200 psi) but with great accuracy at any point in the scale. High precision transducers usually are limited in the range of measurement and can be easily damaged if the pressure limits are exceeded.

The solution:

An automatic pressure transducer switching network which sequentially selects any one of a number of limited-range transducers as the pressure rises or falls.

How it's done:

In operation, where no differential pressure exists across lines a and b, the two normally open solenoid valves V_{1a} and V_{1b} are open. As the a-b differential pressure rises, it is measured by transducer PT₁ (shown as 0-25 psi) until the 25 psi limit is reached. At this point, as detected by pressure switch PS₁, PS₁ closes valves V_{1a} and V_{1b} to prevent further gas flow to PT₁. The pressure is still applied to the next ramp (PS₂, V_{2a}, V_{2b}, and PT₂) which is set for the 25-50 psi range. Additional networks are added to the

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system to complete the total incremental coverage. Transducer PT provides full range, but less accurate, monitoring of the pressure activity.

Notes:

1. The 0-200 psi range and 25 psi incremental steps were selected only for discussion purposes. Greater ranges and more or less precise incremental steps are entirely feasible.

2. Inquiries concerning this innovation may be directed to:

Technology Utilization Officer
AEC-NASA Space Nuclear
Propulsion Office
U.S. Atomic Energy Commission
Washington, D.C. 20545
Reference: B67-10540

Patent status:

No patent action is contemplated by AEC or NASA.

Source: S. K. Yoder of Aerojet-General Corp. under contract to AEC-NASA Space Nuclear Propulsion Office (NUC-10001)

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